height of the diaphragms, it is easy to employ a second liquid, which is dropped directly, and drop by drop on the carbon; as for instance, nitric acid. It is used advantageously very weak, and when it can no longer serve for the Bunsen battery, because it no longer absorbs hydrogen.

The liquids, as they come off from the cups, are collected, and may serve again until they are saturated.

On the Decolorizing Property of Charcoal and several other Bodies. By
E. FILHOL.*

It is generally stated that charcoal is the only simple body which possesses the property of absorbing coloring matter dissolved in a liquid; it further appears from the investigations of MM. Bussy and Payen, that decoloration by charcoal is a purely physical phenomenon.

Several compound bodies (alumina, sulphate of lead prepared by the moist way, hydrate of lead,) also partake of the property of decolorizing liquids; but it is generally considered by chemists that the action exerted by oxides on coloring matter in the preparation of lakes, is chemical, differing in this respect from that of charcoal; nevertheless, Berzelius was of opinion that the decoloration effected by the oxides and metallic salts resembled that produced by charcoal. My object has been to prove:—

1. That charcoal is not the only simple body possessing the property of decolorizing liquids; sulphur, arsenic, and iron, obtained by the reduction of the hydrated sesquioxide by hydrogen, are all possessed of decolorizing power.

2. That the number of compound bodies having an appreciable decolorizing power, are more numerous than has been thought, and that this power appears to depend much more on the state of division of these bodies than on their chemical properties.

3. That such bodies which easily appropriate one coloring matter may have but little tendency to do so with another; thus phosphate of lime from bones (artificially obtained) scarcely decolorizes the sulphindigotate of soda, whilst it exercises a more energetic influence on tincture of litmus than does animal charcoal.

3. That the decoloration, in the majority of cases, is a purely physical phenomenon; thus the same coloring matter is absorbed by metalloids, metals, acids, bases, salts, and organic substances. It is easy, moreover, by employing suitable solvents, to remove the coloring matter in an unaltered state from the body which had absorbed it.

I do not doubt but that these facts may prove useful in analytical chemistry and in some manufacturing processes.

The following results, which I have extracted from my memoir, will give some idea of the energy with which certain decolorizing matters act.

* From the London Chemical Gazette, April, 1852.

My observations were made with one of Collardeau's double lunette colorimeters:—

Decolorizing Power of different Substances, compared to that of purified Animal Charcoal, supposed equal to 100.

	Tincture of Litmus.	Sulphindigotate of Soda.
Charcoal,	100-00	100-00
Pure hydrate of iron,	128-90	1-97
Alumina,	116-00	0-91
Phosphate of lime,	109-00	1-97
Iron reduced by hydrogen,	95-33	100-00
Milk of sulphur,	26-67	0-00
Deutoxide of manganese, (native,)	88-90	13-80
Indigo,	80-00	13-50
Oxide of zinc,	80-00	6-55
Stannic acid,	70-40	0-00
Antimonic acid,	66-66	1-97
Chromate of lead,	70-40	2-92
Litharge,	66-66	3-85
Sulphuret of antimony, (native,)	59-25	0-00
Sulphate of lead,	50-00	13-80
Deutoxide of copper,	26-67	0-00
Protochloride of mercury,	22-22	0-00
Sulphate of baryta, (artificial,)	50-00	0-00
Sulphuret of lead, (artificial,)	130-00	16-67

Comptes Rendus, Feb. 16, 1852.

Ellis' Blooming Rolls.

Mr. Thomas Ellis, of the Tredegar Iron Works, Monmouthshire, is the inventor of a simple modification of the common machine for rolling blooms or piles of iron, which possesses some very important advantages over the old arrangement. The system on which it operates is, that the rolls are made to rotate first in one direction and then in the other, so as to roll the pile backwards and forwards in the direction of its length, thus forming both ends of the bloom alike.

Fig. 1.

Fig. 2.

Fig. 1 is an end view of the rolls and actuating crank, the connecting rod of which is represented as broken away. Fig. 2 is a view at right angles to fig. 1, showing the rack and pinion apparatus as divested of the driving crank. The power is communicated by the main shaft, A, constantly revolving, and carrying on its end a powerful crank, to the pin on which is jointed a connecting rod, passing to an eye, B, on one end of a horizontal toothed rack. This rack slides in guides on the top of a pedestal, forming the bearing of a short shaft, having upon it a toothed pinion, C, with which the rack gears. This shaft is coupled at D with the lower of the pair of rolls, E, so that as the shaft, A, revolves, it gives a continuous reciprocatory rotary motion to the pinion, C, and through it to the rolls.

The result of this system of rolling is, that the bar of iron is made of uniform quality throughout its entire length, whilst the bloom does not require to be lifted over the top of the rolls, as is the case at present. Hence arises a considerable saving in time and labor—for two men and two boys are able to roll by it five tons per hour, or sixty tons per day of twelve hours, and blooms of from 10 cwt. to a ton can be managed with comparative ease.

The machine has now been rolling for some time at the Tredegar works, and has passed through it upwards of 13,000 tons without accident.

Remarks.—The old or present system of rolling, by passing the iron between the rollers and then passing it back over them, and again passing it between them, &c., always presenting the same end of the bar first to the rolls, does *not* “make a bar of iron of uniform quality throughout its entire length,” as above stated, because the cinder and impurities which are fluid, are driven backward, or towards that end of the bar which comes last through the rolls; consequently, this end always contains more impurities than the one first presented to the rolls.

The plan of rolling described in the foregoing article, would therefore make a bar of iron of “uniform quality,” because the cinder would be driven alternately from one end of the bar toward the other, but not driven *out*, as it is in the plan generally adopted.

When it is desired to make a fine quality of iron, we think this plan would not be found to answer satisfactorily, but where a large quantity of ordinary quality is wanted, it would probably do very well. S.

FRANKLIN INSTITUTE.

Proceedings of the Stated Monthly Meeting, July 15, 1852.

Owen Evans, Esq., President, *Pro. Tem.*

Isaac B. Garrigues, Recording Secretary.

The minutes of the last meeting were read and approved.

Donations were received from The Royal Astronomical Society, London; Hon. Jos. R. Chandler, M. C.; The Young Men's Mercantile Library Association, Cincinnati, Ohio, and from Messrs. Isaac Lea, Ed. D. Ingham, R. H. Kern, Dr. L. Turnbull, and George M. Conarroe, Phila.

The Periodicals received in exchange for the Journal of the Institute were laid on the table.

The Treasurer read his statement of the receipts and payments for the month of May.

The Board of Managers and Standing Committees reported their minutes.

The Committee on Exhibitions reported that they had instructed their chairman to offer premiums for the best designs for a certificate of Third Premium to be awarded at the Exhibitions.

New candidates for membership in the Institute (2) were proposed, and the candidate (1) proposed at the last meeting was duly elected.

Errata.

Page 46, 13th line from bottom, for “that *position* of the former power,” read “that *portion* of the former power.”